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Relationship between public investments and exports of Finland's machinery and transport equipment industry

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Abstract

The objective of the thesis was to research the relationship between public investments and export of Finland's machinery and transport equipment industry. In year 2015 General radio of Finland [Yleisradio] published an article, in which it addressed the challenges Finland's economy is standing on. The challenge was centered with exports, more precisely exports of machinery and transport equipment industry. At the time author was carrying through specialization studies and the chosen academic track related highly to the topic of the article, therefore the foundation for the motivation regarding this research was created.

Study was conducted as a quantitative research. Literature reviewed addressed definitions and measurements of two variables, public investment, and exports. Research materials consist of secondary data collected from the statistics of the Confederation of Finnish Industries [Elinkeinoelämän keskusliitto] and the Finnish Customs [Tulli]. Collected data shows Finland's amount of public investments and exports in Euros through the years of 2010-2019. Microsoft Excel charts as well as Pearson's correlation coefficient were utilized in data analysis to reveal the relationship between the amount of public investments and the amount of exports.

Although some inconsistent trends were identified regarding public investments and exports, Pearson's correlation coefficient suggests a positive relationship between the two variables. This finding allows to make a suggestion to increase the public investments in order to stimulate the growth of exporting.

Keywords (subjects)
Exports, machinery and transport equipment, internationalization, competitiveness, public investment

Miscellaneous

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Tiivistelmä

Opinnäytetyön tarkoituksena oli tutkia, millainen on julkisten investointien ja viennin välinen yhteys yllä mainitussa kontekstissa. Vuonna 2015 Yleisradion verkkosivuille ilmaantuneen artikkelin luettuaan, tekijä päätyi kyseiseen aiheideaan. Artikkeli käsitteli Suomen heikkoa talouden tuloksellisuuttaa, näkökulmana viennin kasvun haasteet ja vielä tarkemmin konepajateollisuuden viennin kasvun haasteet. Tekijän tuolloiset erikoistumisopinnot kansainvälistymisen ja kilpailukyvyn aihealueilla käsittelivät hyvin läheltä tutkimuksen aihetta, ja tämä loi motivaatiopohjan opinnäytetyölle.

Tämä tutkielma suoritettiin määrällisenä tutkimuksena. Tutkimuksen teoria käsittelee Suomen julkisten investointien ja viennin määritelmiä ja mitattavuutta. Tutkimusaineisto koostuu sekundäärisestä datasta ja se kerättiin Elinkeinoelämän keskusliiton ja Suomen tullin tietokannoista. Kerätty data käsitti Suomen vuosien 2010-2019 välisenä aikana tapahtuneiden julkisten investointien ja viennin euromääräisiä summia. Analyysissä käytettiin Microsoft Excelillä luotuja viivakaavioita ja Pearsonin korrelaatiokerrointa paljastamaan julkisten investointien ja viennin välistä yhteyttä.

Vaikkakin joitain epäjohdonmukaisuuksia havaittiin julkisten investointien ja viennin suhteen, Pearsonin korrelaatiokerroin paljasti positiivisen yhteyden kahden muuttujan välille. Tämä löydös mahdollistaa ehdotuksen, jossa julkisia investointeja lisäämällä saadaan stimuloitua viennin kasvua.

Avainsanat (asiasanat)
Vienti, kone-, laite- ja kuljetusvälineteollisuus, kansainvälistyminen, kilpailukyky, julkinen investointi

Muut tiedot

CONTENTS

Figures

1 Introduction

1.1 Background

Finland's lack of growth in exporting has been a concerning factor in its current economical state. Investments into different sectors are in good form, still there is no great signs of growth in exporting. According to Finnish economic experts, Finland would need more demand for heavy exporting goods such as, machinery. If only exporting in this field would get some increases, it would result into a greater economic future for Finland (Järvinen 2016).

The impact of machinery and transport equipment exports to the overall exporting and Finland's economy appear well in ETLA's publication written by Berg-Andersson (2019), and the publication argues the following – Contribution of net exports to Finnish DGP in 2019 was highly positive, when goods and services exports combined, increased faster than imports. This is mainly due to two cruise-ship dispatches and gas pipe deliveries to open seas and Russia. Therefore, the affect and impact of the Finnish engineered heavy machinery and transport equipment products exports cannot be underestimated, even if the main industry in terms of exporting in Finland is paper industry.

When addressing exports and public investments in Finland, study cannot oversee the affects Nokia had and is still having on Finland. Ali-Yrkkö & Hermans 2002, described how Nokia bred already what was considered a high standard technological know-how even further. Know-how that was acquired and developed at Nokia was passed on to Finnish universities and institutions and that for it is still treasured and developed further. (1-2.) Nokia as it is remembered as a previous telecommunication solution providing company which one's story began in 1990s. (Nokia, n.d.) Is not relevant for this study as a company, instead what the company had left and how it is still affecting Finland is relevant and will help author to get wider idea on the topic.

Column on the pages of Elinkeinoelämän tutkimuslaitos (ETLA) [Research Institute of Economic Life], Vihriälä (2017), states that Finnish exporting is lacking in advancement. Also, Vihriälä argues with the study conducted by VATT Institute for

Economic Research, stating that Finnish exports did not come crashing down for a long time after financial crisis in 2008. Hence, Finland had no issue with the cost-competitivity and so did not sign a competitivity-agreement. These interpretations are incorrect.

The study mentioned above had thus, important observations in it. Exporting had been examined more so through business matter, compared to previously conducted studies. This means that analyzing exporting through product and business-oriented view will provide more contextual thoughts. Following aspects are considered. Industrially considered businesses may export services and businesses considered through service sector may export goods (ibid.).

According to Mäki-Fränti & Vilmi (2016), since financial crisis in 2008, Finland's economy has not evolved compared to similar sized countries in European Union (EU). European commission's in 2016 published forecast, that Finland will remain as a slowly developing country in Europe in terms of economy – right next to Greece. Reasons for poor development of Finland's gross domestic product (GDP) can be reviewed with a comparing it with similar small countries in Europe, such as, Netherlands, Belgium, Ireland, Austria, Sweden, and Denmark. Mentioned countries are therefore comparable with Finland because they possess rather open economies and similar in terms stage of development.

Even though above reference suggests conducting research through comparing Finland with other comparable countries, it is not the way this study is carried through. All the references are carefully considered to provide knowledge on the topic. Hence, research is carried through by studying data of exports and public investments in category of machinery and transport equipment to get a more precise view and to narrow the field down to more analyzable / controllable amounts.

Ministry of Finance (2019) stated in economic survey conducted in late 2019, the public investments had 20 percent (%) share of total investments, from which half consist of local government investments and other shy of a half of government investments. Machinery and transportation equipment share of a total public investment recorded at 10 percent. In addition to this information, it is predicted that

public investment ratio to gross domestic product (GDP) will climb to 4,3 percentage. (52.)

In terms of exports, the growth in Finnish exporting is predicted to slow down in 2020, although, demand for services exports will increase and that is encouraging matter. (ibid., 35.)

1.2 Motives for research

Topic of this research came about when author got exposed to the publication of the well-known Finnish publisher. Yleisradio Oy [Finnish Broadcasting Company] (YLE) is a state owned and regulated communication corporation. Therefore, ran by tax-revenues, collected from Finnish citizens. (Yeisradio Oy 2019, 3.) Publication in which author is referring to, could be read in the previous chapter. Since, the impact was caused by a rather general publication and not by extensive research, the topic was more approachable.

At the time author got exposed to the publication he was carrying through his degree in International Business, majoring ‘Economics of Internationalization and Competitiveness” and “Marketing”. Referring to the first major stated, this topic is vastly related to it. Also, having a personal interest on significant companies, employers and businesses in Finland, the topic seems rather reasonable.

Since, Finland possesses expressive know-how on machinery and transportation equipment products, also in general, per Rikama & Salmi (2010) nations which possess high educational level can embrace new technologies faster and with lower cost than nations with less capital. In addition, firstly mentioned nations are also in better condition to conduct scientific, technological, and commercial innovations, which are determining factors in terms of success of businesses.

When comparing level of education and learning, Finland is always amongst the best. However, know-how of personnel is sum of different factors – On which businesses heavily lean on. (ibid.)

Therefore, it is highly interesting to conduct a research about how public investments affect the exporting and what is the relationship between these two

practices - Again since the public investments have been in great form in recent years. (Economic Survey 2019, 52.)

Relevance for the exporting industry and more precisely machinery and transportation equipment industry is moderate. Regardless, relevance can increase if author will get employed to the industry. If so, the share of the knowledge about the topic is acquired.

Author will gain knowledge and insight of studied industry and acquire global perspective through the study. This work will increase authors capital and will develop him across the many aspects.

1.3 Research objectives and question

The challenge that Finland's facing is lack of growth in exporting, amongst the other sectors. Thus, focus is on the exporting, more precisely exporting of machinery and transportation equipment with relation of public investments made to this particular industry. Also, determining factor crosses authors thoughts often – Finland's exceptionally rough climate conditions have had definitely an effect on a level of know-how with assumption that the effect must have been a positive for the know-how and therefore, for the competitiveness and attractiveness of Finnish engineered machinery and transportation equipment.

Objective for this research study is to answer research question, to gather greater view on the relationship between Finnish public investments and exports in the industry of machinery and transportation equipment. Whether question will get fully exposed or not, important information will be gathered for personal development and possible further research.

Research question

Question asked below took different contextual forms throughout this research, since, translating terminology used in Finnish publications was rather challenging. After reviewing this topic extensively and issuing it with worthy consideration, amongst the terminology, research question took the following form:

- What is the relationship between public investments and exports in the machinery and transportation equipment industry?

Research is conducted through secondary data, data that has been already collected for some other purposes and by some other directions. However, the data provides useful insights to answer or partially answer the research question. (Saunders & Lewis et al. 2009, 256.) Research approach in the other hand can be understood as a deductive approach (ibid., 61.)

Collected details consist of quantitative data, as different conditions of nations trading and exporting need to be measured and compared to deliver desired results. Research design, data collection and analyses are further detailed in the methodology chapter.

1.4 Structure

Introductory part of the study is nearly concluded. Next in line comes literature review, where all the main concepts and theories are closer examined and reviewed. Key concepts are presented briefly first. Viewpoints from which literature is viewed are, how concepts can be defined and measured. Concepts together will help to establish theoretical framework, from which the research problem and the question can be recognized and evaluated. Third chapter: the methodology chapter. It explains the research approach, how data is collected and analyzed, also, chapter covers the context of this research. Fourth chapter is the results chapter, where gathered knowledge is combined and presented in the clearest possible way. And the fifth chapter is for the discussion and conclusion, it is also where future research possibilities are reviewed and recommended. Also, author’s own reflections, thoughts, and considerations on the topic are stated.

2 Literature review

2.1 Key concepts

The most determinant concepts regarding this research are reviewed in this chapter. These concepts are chosen after carefully considering the topic, ending up with the concepts that in author's mind would suit and explain the reasoning for the research comprehensively. Exporting and public investments are briefly introduced in the following, and for the extensive review each concept have own sub-chapter. Also, theoretical framework is defined in the following, and introduced in its own sub-chapter.

Hence, export is defined by Segal (2020) as a practice in international trade. Goods and services that are produced in one country and sold to buyers in another. International trade is sum of exporting and importing activities. Above all exporting is important in the countries where domestic market is narrow. It enables firms and countries to discover new markets and consumers. Therefore, exporting is significant for modern economies.

Lee (2019) describes public investment as a practice when state invests assets, whether investment is forwarded through central or local government or publicly owned industries or companies. Objectives for this practice is to result growth in the industry invested in. Therefore, having affect on the country's economic state.

According to Hakala (2004) theoretical framework is where author will place his share to a wider background and possible professional theory. Also, this part enables to provide different approaches into the topic. Process description might be ever so precise phase description, and conclusions in the end should evaluate how original plan actualized and how well did author succeed in his study. (121-122.)

As well, Saunders & Lewis et al. (2009) suggest that forming theoretical framework and how literature is reviewed results from the research approach author has selected. In some studies author will use literature to help identify theories and ideas, which will be tested using data. This process is described as a deductive approach, where author develops theoretical framework and tests it using data. (61.)

2.2 Exporting

Definition

Lavin & Cohan (2011), argue that there is a great risk in standing still, because world is moving. Great uncertainty occurs when entering foreign markets. It usually does not matter how many years company has been operating successfully on home turf, the reality of the changing world kicks in when trying to enter exporting. Also, professional who is well established in business, the assumption might be, that with help of professional's expertise it would be rather easy to enter exports, it is not, regardless of the experience. (3-4.)

Kickstarting exports is a mutual planning and decisioning of company's board and operative management according to Väisänen (2018). Also, decision for starting exporting should be according company's strategy and initiative. It cannot start from board listing unrealistic targets, before consulting workers. Also, it cannot start from chief executive officer for example, reporting to board about new subsidiary opening abroad, before consulting board. Respectively Väisänen K. has come across both examples. (36.)

Moderate questions related to exporting:

- Start exporting or stay operating domestically? Go or no go?
- If go, what are the foundations for it?
- Where and for which customer segment exports are intended? Do research, clarify competition situation.
- How product or service should be sold to foreign customer? Pick a right model for doing business.
- How much should company invest and resource in exporting? What are quantities?
- How exporting practices are financed?
- Who is responsible for the practice? Pick fitting professionals.
- How exporting is measured? Determine indicators.
- How successful export practices should be awarded? Which are incentives?
- What are criteria for failure and when should the exporting stop? Exit-strategy.

Above listed questions are in usual business environment answered by board together with functional operation management. (ibid., 38-39.)

When considering products and services and how those can make a shift abroad, Woznick & Woznick (2002) state that different factors should be considered, factors such as, government import controls, availability of foreign currencies, purchasing power, lower wage cost, locally available raw materials or product alternatives, social and cultural factors, and climate and environmental factors. (1.) More about how product and services demand can be discovered in measurement section.

Process of company's internationalization can be also described as an export marketing. Two ways of export marketing was named by Grafers & Schlich (2006):

1. Indirect exporting: where usually small and medium sized companies rely on a middleman to handle their business operations such as: researching the market, planning, figuring out distribution and communication.

2. Direct exporting: when company organizes marketing actions by its own. This way of export marketing is more resource demanding than indirect. (21-22.)

Exporting is a practice of a company, state, or institution. Company is brought alive by entrepreneurship. Väisänen (2018) argues that there are different similarities between what Ministry of Finance in Finland are demanding from companies to deliver trade surplus and how society is pressuring individuals towards entrepreneurship, as if it was only way to go. If company is successful in its own local or regional area or home country, there is necessarily no reasons to make the extra-push financially towards abroad markets. Businesses should practice exporting only from their own will and through their own strategy. (13-14.)

Interesting observation was made by Goswami & Mattoo et al. (2012), Ghani (2010), study examined developing-country perspective on exporting. Appeared that trade in goods and industrial development seemed in some cases unrelated to the performance of exporting services. Number of developing countries demonstrated faster growth in services exports than in exporting goods, and this appearance has a positive effect on exports diversification. Suggestion was made that "*service revolution*" is occurring. (1.)

Generally manufacturing industry and services industry are viewed as independent ones, although, for some businesses it is viewed as one and certain competitive advantages are placed under that view and for those it can be shortened as servitization. (Baines et al. 2013, xi.).

Measurement

Per Majaski (2019) exports generally are measured through net exports. Net exports measure state's total trade. Calculation behind it, is rather simple, the value of a goods and services produced domestically and sold abroad minus all the goods and services bought and imported to the country. When country's net exports indication is positive it enjoys trade surplus, vice versa, country's net exports show negative it suffers from trade deficit.

Before any measurements are monitored, proper market research should be conducted whether product or service will be desirable in the target market. Per Woznick & Woznick (2000) exporters conduct market research to notice the marketing opportunities, thus, previously listed factors determine the frames from which the research is conducted. (17.) There are many ways in figuring out how well your products will perform in foreign markets. Probably the most common one is to evaluate product's performance in domestic market. Although, that is not the most accurate way, but if targeted market shares similarities with domestic market it will most definitely work out there. Also, company can assess its product's competitive advantage in foreign market, by examining whether there is possibility of copying the product overseas, if not, then it will most likely have a competitive advantage and high demand. Lastly if product's sales are declining in domestic market, but have been successful previously, there is high chance that this product may find its way to a foreign market, market that is not so demanding at the time in terms of advanced technical products. (Katzman 2011, 13.)

Since, gross domestic product (GDP) is generally used when stating moderate performance of a country, it has important relation to exporting and vice versa. Chappelow (2020) defines GDP as total market value of goods and services made in a country in determined time-period. GDP can be also understood as an overall scorecard of nations economic health. Usual time-period is yearly basis, sometimes

it can be calculated through quarters. Calculated components from which GDP is realized are:

- All private and public consumption,
- government outlays,
- investments,
- additions to private inventories,
- paid-in construction costs, and
- foreign balance of trade (exports are added to the value and imports are reduced from value).

From all the above-mentioned components the most emphasis should target to foreign balance of trade. (ibid.)

Kavonius (2012) introduces a method for growth contribution also known as, net export method. Method founds on GDP and final demand set, where imports are subtracted from exports and so it demonstrates exports net influence on GDP's growth. On the other hand, Kavonius (2012), Forssell (2010), in the article correctly states that, calculated sets are not commensurate. Because exporting also covers intermediate products used and depending on nation different transit transactions, which naturally do not appear in GDP. (34.)

Since, Goswami & Mattoo et al. (2012), Ghani (2010), suggested that the "*service revolution*" is occurring, and leaning on this suggestion. (1.) Baines et al. (2013) states that services and serving industries cannot be measured similarly. Author's thought that they found an equivalent measurement through product performance, availability, and reliability. Here, Baines et al. respectively were influenced by the heritage of production. (123-124.)

Suggestion "*Successful delivery of advanced services is enabled by measures focused on the outcomes aligned to individual customers, which are then cascaded in various forms throughout the service delivery system of the manufacturer, and complemented by indicators that broadly demonstrate value." (ibid., 123.)*

2.3 Public investments

Definition

Investments build groundwork for growth. Investment is production capacity add-on: it enables production to grow in the future. Investments have evolved slower, than other components of demand (Elinkeinoelämän keskusliitto n.d.).

According to Warner (2014), empirical paper has been conducted where is the public investment has flourished higher economic growth, productivity, and long-term development over the past four decades. Also, the study examines countries that have experienced so called “Investment booms” and those countries that have not experienced such. The evidence surfaced the fact that moderate positive and momentary effects were detected, yet, the longer-term impact was missing. (3-4.)

Rajaram et al. (2014), suggest that whenever country that is facing high debts and investments are limited with strict resources, each currency placement is carefully considered to count and contributed for the sake of greater economic growth. In these situations, carefully managed public investment and use of resources is primarily important. (1-2.)

Malinen (2015) stated that rather great domestically implemented public investments can result into a negative outcome, in terms of ability to benefit from foreign investments. (7-8.) If, previously mentioned is given deserving thought then, according to Moran & Görg et al. N.d. attracting quality foreign direct investments (FDI) is rather complex, when public investments are great. Why FDI is relevant when studying relationships between public investment and exporting, appears in the list of how quality FDI’s can be characterized:

- Developing, enhancing, and contributing to target country’s employment,
- Improving host nation’s know-how and skill base,
- Importing technology and knowledge,
- Enhancing competitiveness of domestic firms, and
- Socially and environmentally responsible operation.

To attract above mentioned characteristics, host nations should consider actions in a larger scale, for example, how public investments intended to boost exporting should affect in the total economic growth. (ibid. N.d.)

Worth to consider

There is also important to address the problem and possibility of corruption when considering public investments. Conditions for such phenomena could be for example, weak management, complex projects, and weak accountability systems. When these conditions are permitted, it enables large amounts of money intended for public investment in a first place, to be disorientated to private accounts. Yet, these conditions are mainly enabled in the economies that primarily rely on volatile revenues, such as, natural resources. (Malinen 2015, 7-8.)

However, according to ibid. (2015), public investments in poor countries have resulted in a rapid economic growth. Yet, when public investments occur in a relatively rich country, growth is substantially slower. (8.)

Measurement

In a nutshell, measuring public investment can be considered when performance of certain industry is recorded, relative to the investments made prior to his industry. (Warner, A. M. 2014, 3.) However, according to Suvanto (2015), measuring successfulness of public investment is a lot more than the monetary manner. Even though the objectives are in economic growth, still economic growth can be viewed from different perspectives.

Respectively Rajaram et al. (2014) suggest economic rate of return (ERR) to be most appropriate way of measuring public investment efficiency. ERR is a rather common measure used and presented in open economies, where project implementations are generally well executed. (35.) Later Kenton (2020) calls what appears ERR a rate of return (RoR), where net gain or loss can be measured and expressed as a percentage. In other words, it is used to measure profit or loss of an investment over time. Although, RoR is not commensurate, since, in the simple rate of return calculation it does not account inflation. However, inflation is considered in the real rate of return calculations.

According to European Central Bank (2016), measurements used in conducted article were gross fixed capital formation of the general government, to derive desired results regarding public investment. Reasoning behind this measurement is because it enables use of comparable data available for majority of the countries. (75.)

2.4 Theoretical framework

Theoretical framework was developed through the findings of literature and adapted from where Warner (2014) stated that public investment performance can be measured with the help of understanding the output that it generates. (3.)

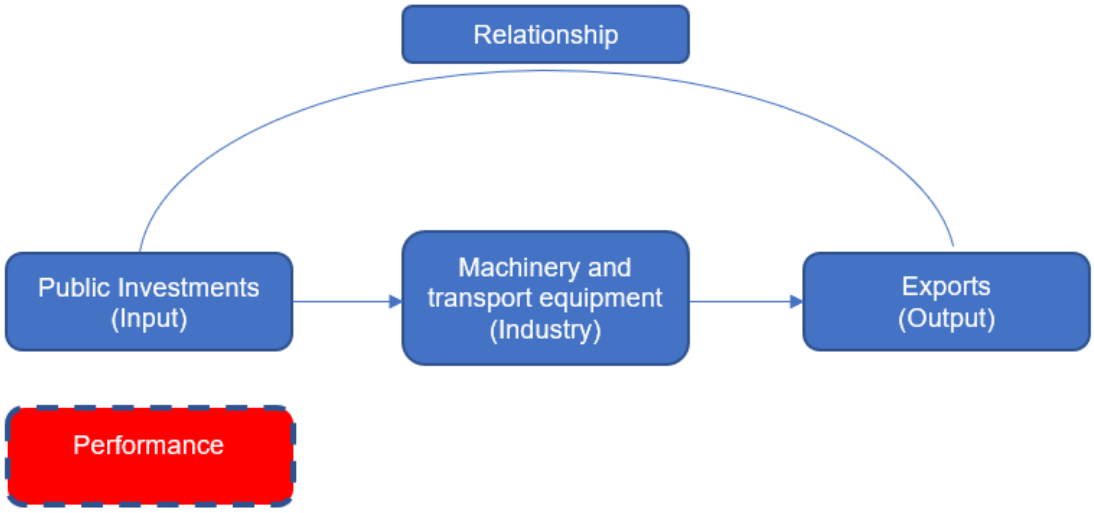


Figure 1. Theoretical framework (adapted from Warner A. M. 2014, 3.)

The framework considers four factors around the industry of machinery and transport equipment. These four considered factors can be seen above and in listed in the following:

i. Public Investments (Input),
ii. Exports (Output),
iii. Performance, and
iv. Relationship

It is appropriate and demanded to explain the role above listed factors possess. Public investment works as an input for the industry, resulting into exports as an

output. Performance can be measured when moderate calculation is made, input is subtracted from the output. Analyzing this for the chosen time-period, results or better context around the last factor start to come around, which is relationship between public investment and exports.

3 Methodology

3.1 Research approach

After consideration and becoming familiar with the topic, the research question took the following form:

- What is the relationship between public investments and exports in the machinery and transportation equipment industry?

Research is conducted to solve research problem with the help of research question, therefore with the help of research method and research material. (Kananen 2015, 11.)

Research can be carried through by using either quantitative or qualitative research approach, or both. Selecting quantitative method will provide researcher with more opportunities for distinct research, however it is not that straightforward as it might sound. Yet, the qualitative method user will face procedures that demand impeccable groundwork, additionally contextual courage. (Hakala 2004, 113-114.)

Quantitative research approach is applied in this study, according to Vilkka (2007) quantitative research is a method used to result a general view on variables (measured quality) and its relationships and differences. It usually answers questions like how much or how often. Objectivity in this context means that there is no bias for the researcher. Research result is objective when it is independent from the researcher. Variable in the other hand is something that is concerning for example nations export statistics or public investment statistics. (14-15.)

3.2 Research context

Country

Finland declared its independency 6 December 1917. (Britannica 2020.) Population of 5,5 million. Gross domestic product (GDP) per capita in 2019 43,485€. Republic, parliamentary democracy; 200-member, unicameral parliament. Life expectancy of men 78 years and women 84 years. (this is FINLAND 2020.)

Figure 2. Location on the map (Britannica 2020)

As it appears in the picture above Finland is in the northern Europe, and the capital of the nation is Helsinki. As one of the most northern and geographically remote countries in the world, fierce climate occurs in Finland. Country shares boarder with three different countries, Sweden, Norway, and Russia. In relation to the boarder

neighbors, Finland also shares a rather rich, unpleasant, and heroic history with them. (ibid.)

Exporting

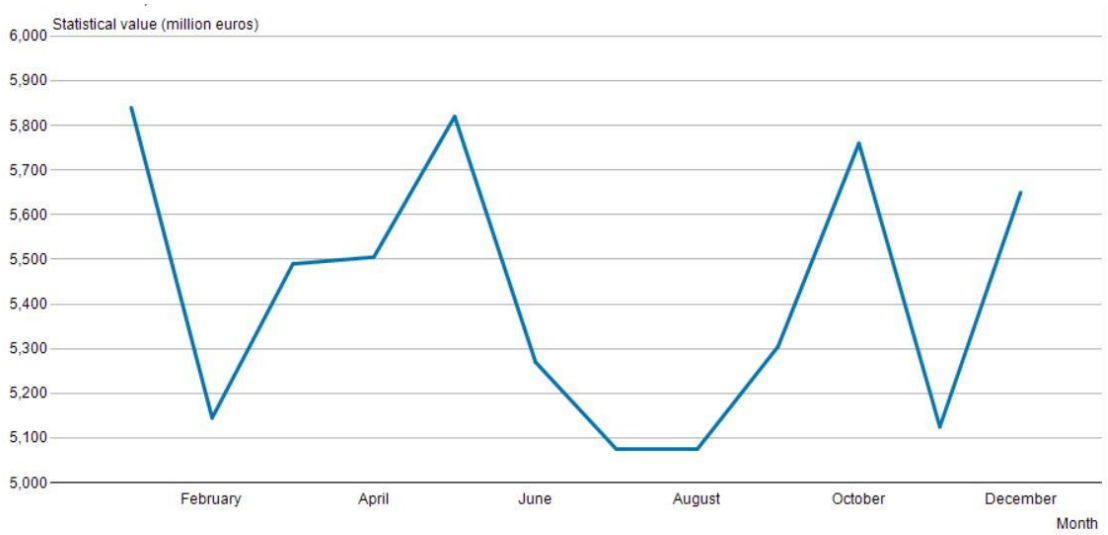


Figure 3. Exports 2019 (Tilastokeskus n.d.)

Above figure indicates how Finnish exports behaved throughout the year of 2019. Statistical value is million euros. (ibid.)

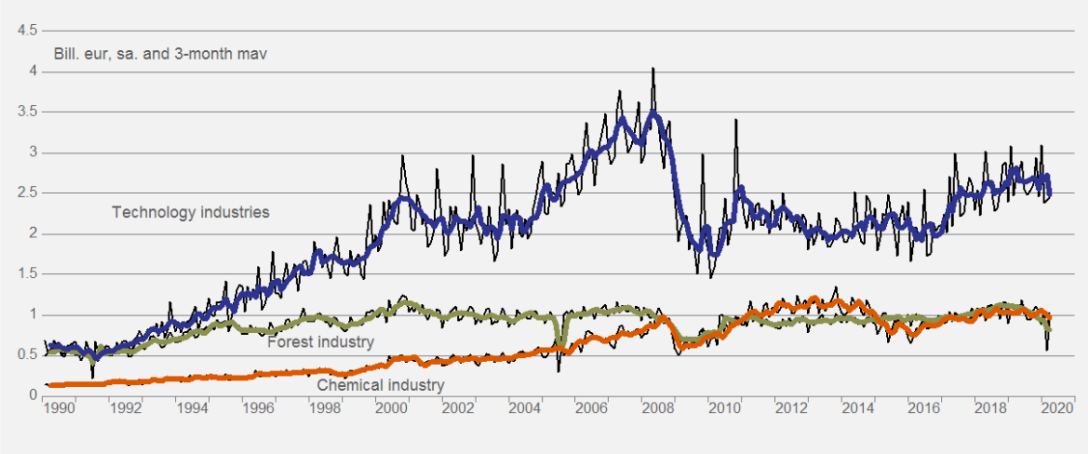


Figure 4. Finnish exports of goods by branch (Elinkeinoelämän keskusliitto n.d.)

Above figure shows the three main branches of exporting in Finland. The Financial crisis that occurred in 2008, is well demonstrated in the figure. Also, encouraging increase of the technology industries exporting is shown, which is closely related to the topic here.

According to Aunola (2020) machinery and transportation equipment recorded 22,3 percent of total exporting in 2019 from January to November. Share grew one percentage point from the year 2018, and yet again it was the largest industry in exported goods according to CPA-classification.

Public Investments

Of total investments in 2019 shy under 20% were public investments, from which half were local government investments and other half state investments. To cut public investments into divisions or industries if you will, 30 percent were earth – and water works investments, additional 30 percent to other construction industry, research and development recorded substantial quarter of the total, and machinery and transportation equipment industry were at somewhat over 10 percent. (Ministry of Finland 2019, 52.)

Public investments recorded growth in 2019, compared to 2018, this is due to local government investments rapid accelerating. Nation's investments are in other hand declining. (ibid.)

3.3 Data collection

Data collected for this study could be understood as a secondary data. Data that has already been collected for some other purposes. This data is usually well available since many organizations and institutions collect data on their performance to later monitor it, and breed for the reuse. (Saunders & Lewis et al. 2009, 256.) According to Vilkka (2017) depending on the research problem, author can collect data as previously referenced, from already established or collected data, so called completed records. Centre of statistics (Tilastokeskus), other nation's institutes with data generated by European Union should not in any cases be forgotten when collecting data, especially when approach is quantitative. All information is suitable for quantitative research, if its measurable or it can be transferred to measurable matter. (30-31.)

In terms of data collection techniques, the systematic observation technique was applied. According to Vilkka (2017) Many sources are applicable for systematic observation, such as published articles, archives, laws and regulations, official

letters, annual reports, and articles. Also, the electronic publications are applicable for the technique. (30.)

Sample size on the other hand is narrowed to specific industry. Machinery and transportation equipment industry is realized as commensurate in the both reviewed segments, exports, and public investment. Secondary data is collected from the respective websites of Confederation of Finnish Industries (Ek) and Finnish Customs [Tulli]. More about secondary data sources in the following.

Secondary data sources

Relevant data regarding the research was obtained from the electronic databases of Finnish institution's and authority's websites. Respectively, from Finnish Customs (Tulli) and Confederation of Finnish Industries (Ek). These two databases shared one factor that appeared encouraging for the author, that is, the naming of each data was consistent, regardless of the source. This resulted into a rather effortless data collection, since, how data was named and separated it followed the same rules.

Data of public investments made to the machinery and transportation equipment industry were collected the from:

Elinkeinoelämän keskusliitto. N.d. Ek:n vientitiedustelu [Ek's inquiry on investments]. Elinkeinoelämän keskusliitto. Accessed on 29 May 2020. Retrieved from https://ek.fi/mita-teemme/talous/suhdanteet/ekn-investointitiedustelu/

And, data of exports in the machinery and transportation equipment industry were collected from the following:

Tulli. N.d. Tavaroiden ulkomaankauppa [Trade of goods]. Tulli. Accessed on 29 May 2020. Retrieved from https://tulli.fi/tilastot/tavaroiden-ulkomaankauppa

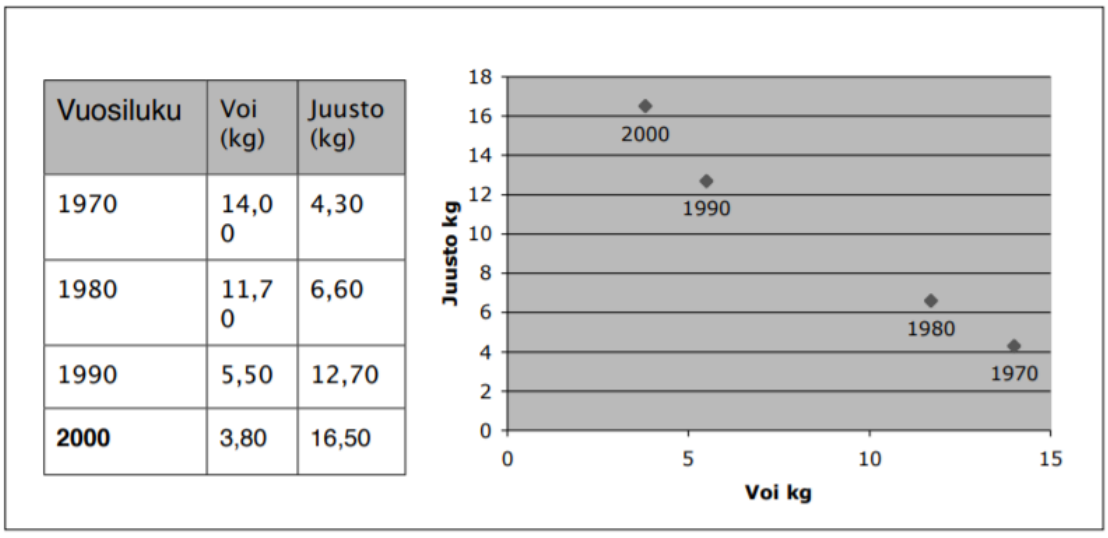
3.4 Data analysis

Data at the present form means very little to anyone, therefore, it should be processed and analyzed, then make it useful, in other words, transfer data into information. (Saunders & Lewis et al. 2009, 414) Different techniques allow

researchers to transfer data into an information, for example using graphs, charts, and statistics. These techniques help author and reader explore, present, describe, and examine relationships and trends occurring in collected data. (ibid.)

Vilkka (2017), Heikkilä (2004) suggests that, whenever quantitative research is conducted the analysis method should reflect to the information from which data is derived. Applicable analysis method should be predetermined with the help of research problem and question. Also, analysis method is chosen based on how many variables there are to be analyzed, and what is the relationship between variables. (119.)

For data analysis Microsoft's Office product Excel™ is applied. Since, the research itself can be characterized as a moderate, the analysis method is also picked by availability. Industry is divided into two segments, data from public investments and exports, which can be also understood as an input and output. Results from analysis are placed into framework for realizing the relationship between previously stated segments.



Vuosiluku	Voi (kg)	Juusto (kg)
1970	14,00	4,30
1980	11,70	6,60
1990	5,50	12,70
2000	3,80	16,50

Figure 5. Correlation Coefficient (Vilkka 2017, 130)

To demonstrate findings more clearly Vilkka (2017) introduced a correlation coefficient. Above figure is to demonstrate how correlation coefficient can be applied. Vilkka (2017), Puranen (1997) suggest that in analyzing the data through the correlation coefficient simple dispersion figure should be applied. (130.)

The Pearson correlation coefficient is applied to measure the qualification of a linear connection between two variables, where r=1 signify flawless correlation and r=-1 pointing flawless negative correlation. (Social Science Statistics n.d.)

3.5 Verification of results

Validity and Reliability

Saunders & Lewis et al. (2009) write and describe validity and reliability of the data as follows:

1) Will the measured concepts produce the same results in another time?

2) How about other researchers, will they result same observations?

3) Is the way sense was resulted from the raw data transparent? (156.)

Above listed questions, direct author towards the realization, whether the data collection techniques and analyses process were consistent enough. Also, questions above work as an assessment factors for the validity and reliability of the research. (ibid.)

Vilkka (2017) describes validity of the research as how well author was able to transfer the theory of the research into a measurable matter. And, reliability was described as how research succeeded in delivering non-coincidental results. In other words, reliability asses how consistent results can stay, if there would be multiple rounds of analyses. (149.)

The research question is that type, where there is no one answer nor result to it. However, data analyses will provide context to the question and therefore results will explain the question partially. Also, it will arise new questions around the original, so, findings can be generalized in the context of the research question and extended to for example more precise questions.

4 Results

Structure

In this chapter, collected data and results are presented in appropriate form. Results are introduced, explained, and reasoned as precisely as possible. General answer to the research question is communicated, through the theoretical framework, where factors are adapted from the literature reviewed. Facts based on the data are only presented here, for authors discussion and opinions, refer to next chapter.

Firstly, data and findings on the public investment are presented. Secondly, the other segment of the data called exports is presented with the table and findings. Thirdly, performance is reasoned through the correlation coefficient introduced in methodology chapter. Relationship factor is spared to the discussion chapter, where the findings on the research question are discussed and reasoned, also future research possibilities are addressed.

Vital note, data that is collected for the research, and time-period from which the results are reasoned is 2010-2019, that is due to data collection and its complexity. If previously mentioned would be desired, to collect the data from further time, it would place restrictions of its own. Because, terminology in the secondary data changes and one module of data does not encompass regarding industry in both public investment and export. However, the data that is present in the following is rather interesting and facilitates thought regarding this topic and literature reviewed in it.

4.1 Public Investment

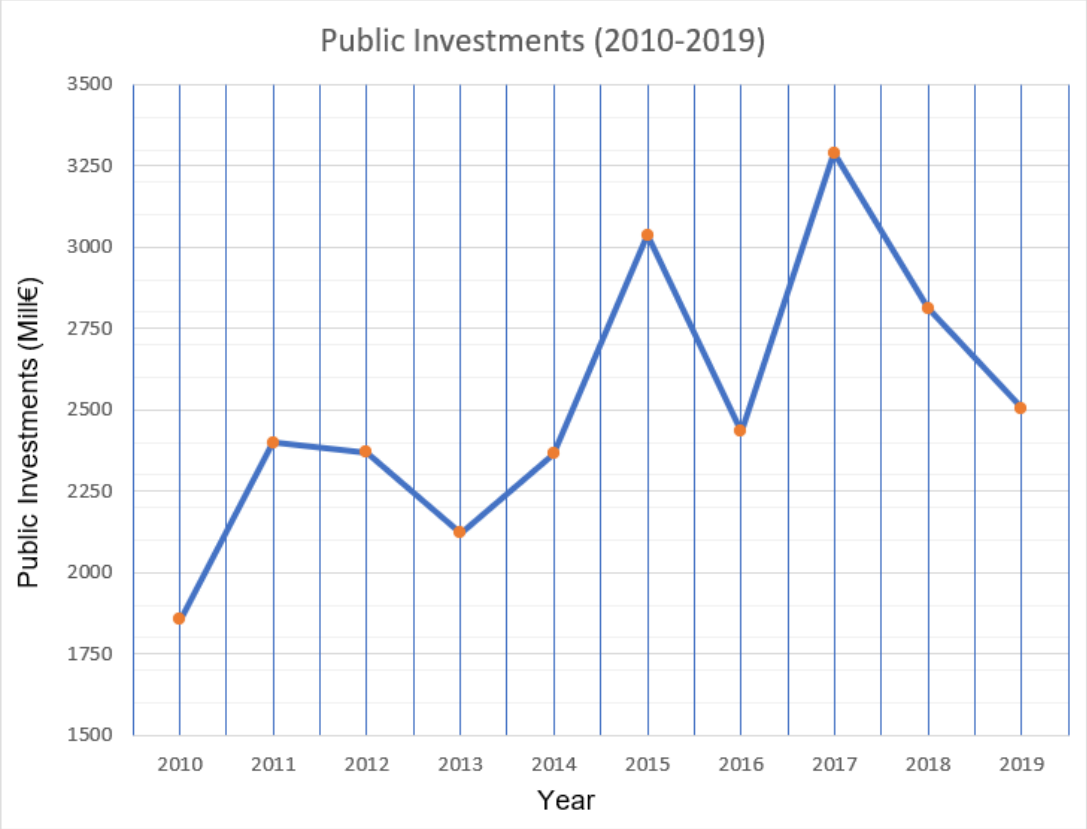


Figure 6. Public Investments 2010-2019 (Elinkeinoelämän keskusliitto n.d.)

Y-axis (vertical) considers the amount of public investments made in millions of euros (€) to the machinery and transportation equipment industry. X-axis (horizontal) considers years from 2010 to 2019.

Public investment practices are clearly been inconsistent throughout the years. Whether the thought on the FDI attraction has come up during the lower investment years or no, year of 2013 arises question regarding the reasoning behind the low investment. Financial crisis of 2008 was still affecting behaviors at that point, but considering years before it, the 2013 seems irrational. Also, the low investment level of 2016 raises questions.

4.2 Exports

Figure 7. Exports 2010-2019 (Tulli n.d.)

Y-axis (vertical) considers the monetary amount made in millions of euros (€) from exporting in the machinery and transportation equipment industry. X-axis (horizontal) considers years from 2010 to 2019.

Exports have clearly shown steady growth through the years, also, there is some room for exceptions, such as, 2012 and especially 2016. These exceptions are moderately connected to the public investment since with a year gap the diagrams conform one another, so there is consensus between them. Seems like when annual high-level investment occurs, the year after it has had positive effect on the exporting. except for 2015-2016.

4.3 Relationship between public investments and exports

Year	Public Investments	Exports
2010	1855	9285
2011	2399	9777
2012	2370	10051
2013	2123	14997
2014	2366	15994
2015	3038	16703
2016	2434	15479
2017	3290	19168
2018	2812	19730
2019	2504	21164

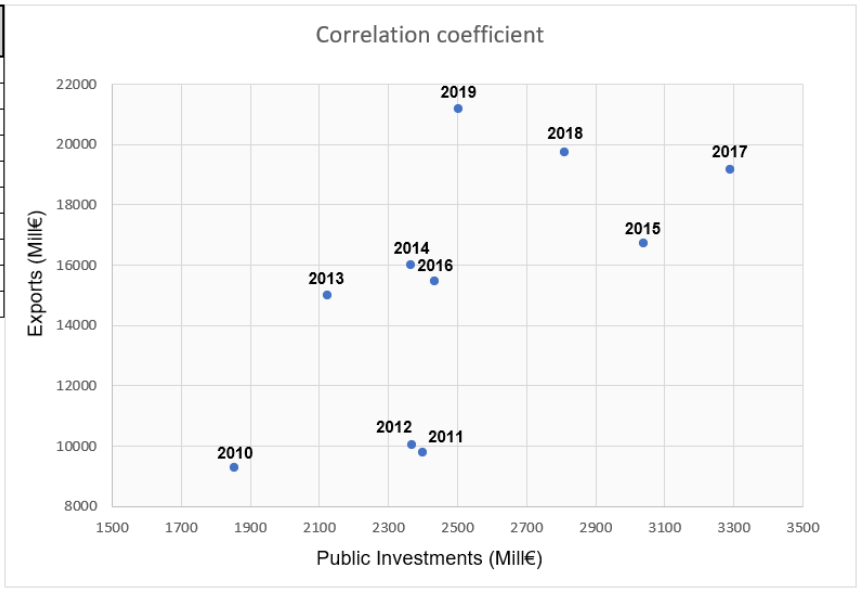


Figure 8. Correlation coefficient 2010-2019 (adapted from Vilkka 2017, 130.)

Table above places annual data into correlation coefficient. In terms of self-explanatory, this table presents great findings. Reader can instantly find interesting details from it. Either it is the slump in terms of growth in years 2014-2016, or the large leap from 2012 to 2013.

Performance measurements for the public investments that were introduced in the literature review are distantly visible from the table, calculations are not shown, yet the visuals draw a thought about the measures.

Also, where this is the most logical order for the factors to be listed and data resulted. Going back to the previous tables is a rather preferred action before heading to the discussion chapter, because reader should also develop a thought on the results to be objective and critical before reading following.

Adjustment should be made once again since the chapter title almost follows the likes of the research question. Researched problem is more closely the relationship between public investments and exports in the industry of machinery and transportation equipment. Therefore, data collected is narrowed to the mentioned industry.

Next, results are reasoned to the point where the relationships between public investments and exports are discovered. Years are considered rather accurately, and figures are reviewed repetitively to interpret results correctly.

2010

This is where the sample's time-period starts, so there is not much to reason here. However, when glancing at the following years, Finland was able to record rather large exports, considering the financial crisis in 2008 and low public investments.

2011

Public investments increased substantially from the previous year of 2010, yet the increase of exports recorded rather calm.

2012

Public investments decreased by a little compared to 2011, also exports grew once again but moderately.

2013

Public investments decreased once again compared to previous years, but this year Finland enjoyed a substantial growth in exporting, nearly 50 percent increase from the previous year of 2012. Assumption could be made that investments made in 2011 and 2012 rev the performance for the 2013. If the effects of investments can be understood as regressive, then inputs made in 2011 and 2012 were made under proper supervisory.

2014

If assumption is objective, then public investments grew partially due to great year Finland had in 2013 in terms of exporting. Investments in 2013 were lower than years before but growth in exporting was moderate at the present level, yet if comparing growth to 2011 statistics it would equal to 10% growth which is impressive.

2015

Public investments increased this year substantially and growth of exports were moderate. Hence, noteworthy is the increase of the input compared to previous years.

2016

This year suggests the future research on the topic. Since, in 2015 investments were generous, it would make sense (if monitoring the trend) that exports would grow, only to be assuming wrong. It is appropriate to state that growth statistics in exports were disappointing. Also, investments in 2016 were lower than the year before.

2017

After disappointing year, positive data is derived from the exports. Exports grew shy of third compared to 2016. Also, investments were in good form.

2018

After, well performed year in 2018, investments were moderate and growth of exports likewise.

2019

Investments were on the stage of early decade, so nothing worth mentioning there. Exports grew moderately yet broke the 20000 million € mark.

Judgement on the decade is desired since correlation coefficient was applied to conduct results from the data. 2010-2019 offers plenty of data and precisely the amount where it fits to be entered in the Pearson Correlation Coefficient Calculator. Below figure illustrates the calculation and its details.

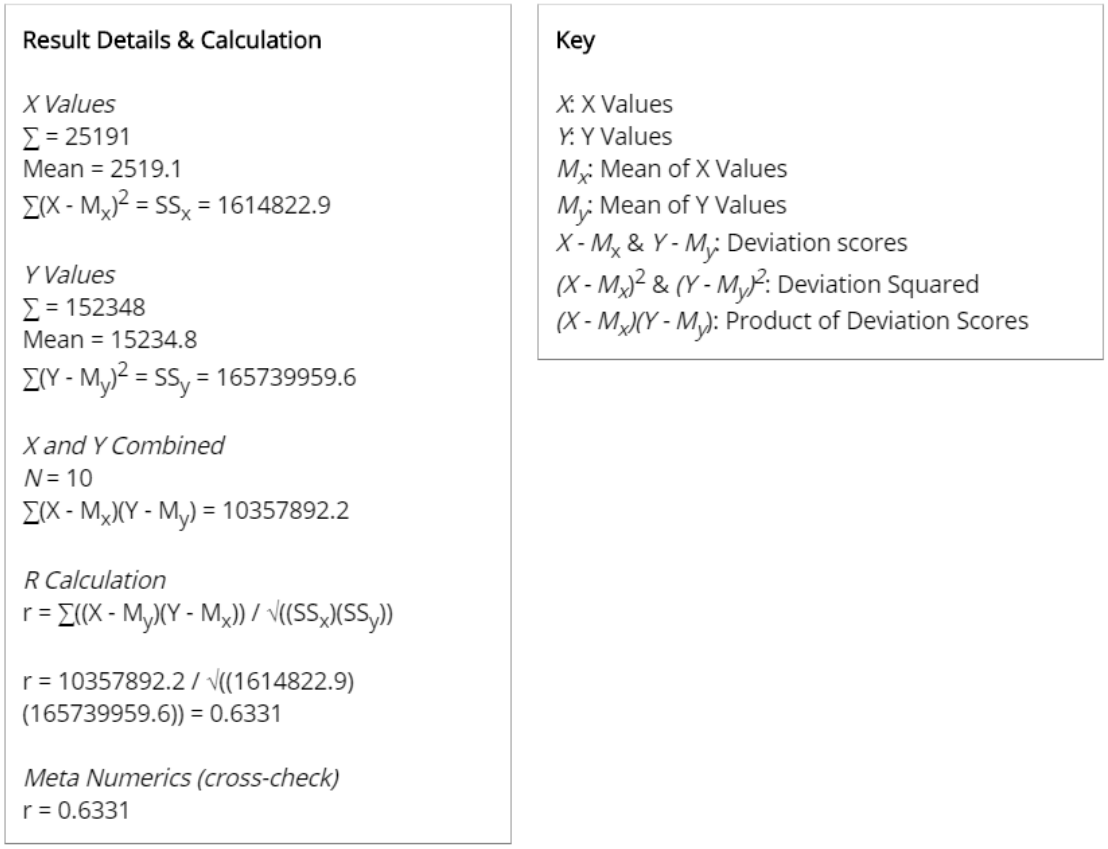


Figure 9. Pearson Correlation Coefficient Calculation (Social Science Statistics n.d.)

Above figure presents the details and calculations of the calculator used. Where the desired value of a “r” is demonstrated at the bottom of the figure. r= 0.6331. The data of two variables, which were public investments and exports, were placed to the X and Y value boxes and from there calculated. The respective value of r is further discussed in the practical implications chapter, under discussion chapter.

5 Discussion

5.1 Objective and summary

Research objective was to answer the research question, or simply build more context to it. Objective was also to develop capital, and to receive extensive knowledge on the topic. Also since, authors specialization studies were highly relevant regarding the topic, the objective was to strenghten the thoughts about the academic track.

After many considerations and thoughts the reasearch question took the following form:

- What is the relationship between public investments and exports in the machinery and transportation equipment industry?

Theoretical framework was adopted from the literature reviewed, framework was adopted to set guidelines and restrictions to stay on the relevant side of the data analyses. Relevant data regarding the research question were collected, from highly related sources. After collecting the data, it was compiled and analyzed with the help of available software on authors laptop. Microsoft's Office tool called Excel™ was used to create charts and figures for better interpreting data. Also, Pearson's Correlation Coefficient was applied for analyses.

Research question was answered, to the extent where results made answering possible. Even so important was to build more context aournd the question. And, this is where author thinks this research succeeded, alongside with the minor nyanses that were observed.

This study has shown that there is definitely future research possibilites. Also, it has shown the statistical behaviour consensus between public investment and exports. Whether this statement is seamless or not, there must be a relationship between the two country practices. If boardered other aspects that might effect exporting away, and leaving public investments there, carefully considered and managed investments result into prosperity and so it is regarding the industry of research.

Interesting questions were devloped during the analyses and resulting of the data, to the extent were author wight proactivelly find out what were the reasons behind spesific years had such a variant statistic compared to the observed trend that has developed during the years.

5.2 Practical implications

Practical implication suggestions are made with a certain carefulness. Since research of this level and its findings are rather moderate. Although, Pearson's

Correlation Coefficient was applied to analyze the data and draw result from it. The desired value “r” was revealed at 0.6331.

According to Vilkka (2014), Mattila (2006), Alkula et al. (1995) numerical values -1 and +1 tell of a perfect linear correlation. Positive value means that both variables grow parallel, in the other hand negative value indicates the parallel decrease of variables. Therefore, the closer value is to 0 the weaker statistical correlation there is. (130.)

Leaning to the previously referred and the r=0.6331, the careful suggestion to the policy makers of Finland could be done. Since, the r-value is substantially positive, it means that in terms of 2010-2019 public investments and exports possess statistical correlation, meaning that the growth of exporting is partially caused by public investments. Therefore, the suggestion would be to increase public investments to record desired growth in exports, not forgetting that well managed investments usually derive better results.

5.3 Assessment of the results

Findings are in line with prior studies to some extent. Since, prior reviewed studies are extensively quality studies, this research did not provide similarities with research done before. Although, findings had distant characteristics in common with prior studies.

According to Järvinen (2016) Finland’s biggest economical trouble is indeed exporting, it is hard to argue against it. Even though literature considered the FDI and its attractiveness, the modern-day footprint of the Finland was established by Nokia in the 90s and early 2000s, and the footprint relay on exporting. With such a high-standard know-how and education Finland could and should be performing better in the international markets, whether public investments are the answer to it will remain untold at this time. Even though exporting grows as it is interpreted in the chart, the growth is not desirable. In this capitalistic ever so growing world nations should demonstrate competitiveness and growth continuously to stay relevant in the eyes of consumers and FDI host countries.

5.4 Limitations of the research

Limitations for the research occurred through various activities. Access to data was limited to some extent, yet the real limitation regarding the data and literature was that the only electronic sources were in use. On this day, proper research can be conducted whether use of source is mainly through electronics or tangible matter.

Research question was answered, thus, more questions and observations regarding the topic and research was gained. When constant questions are developed it can seem as a limitation in terms of the understanding the topic seamlessly yet more questions rev more thoughts.

All the sources of the data were reliable, since it was covered in the methodology chapter – the databases of nations institutions provide reliable secondary data for use, especially when conducting quantitative research.

Author has been as objective towards the research as the boundaries set buy theoretical framework, and data analyses enable. Of course, literature was reviewed by author, theoretical framework was compiled by author with the help of literature and collection and analyses methods of the data were picked by author himself. Conducting a research is a multi-process work and when time and motivation is limiting the overall success, it becomes rather general and objectivity lacks especially in the finalizing parts of the study.

5.5 Future recommendations

For the future regarding this topic, author recommends having a more extensive sample size regarding the data. Also having more variables would result into a wider understanding. Also, the research question could be narrower, it would result into a higher probability of an answer to question, rather than having more questions arise when analyzing results.

The findings encourage to investigate extensively this topic, and result findings that will result into a greater understanding regarding the topic and the context of the topic. Also, when recognizing similar phenomenon in the future, author is more set up to deliver something to the table or have better basis of having a fruitful

conversation around the topic. Thus, questions are important. It would be interesting to find out which factors effected the 2016 exporting activities and monetary result.

Whether this research will facilitate conversations or future research or not, the knowledge gained during this study will be possessed as a advantage to some extent.

Many important questions and issues are yet to be resolved. Questions like what the role of the attraction of FDI’s regarding the public investment push is? Or is the role of a public investment result of something else that has had positive effect and therefore, nation has ability to invest.

References

Ali-Yrkkö, J. & Hermans, R. 2002. Nokia Suomen innovaatiojärjestelmässä [Nokia in Finland's Innovation System]. ETLA Discussion Papers, No. 799, The Research Institute of the Finnish Economy (ETLA), Helsinki

Aunola, A. 2020. Suomen tavaraviennin arvo kasvoi kaksi prosenttia vuonna 2019 [Finnish goods exports grew two percent in 2019]. Viisas Raha, 10 February 2020. Accessed on 28 May 2020. Retrieved from https://www.viisasraha.fi/Markkinat/Suomen-tavaraviennin-arvo-kasvoi-kaksi-prosenttia-vuonna-2019

Baines, T., Baines, T. & Lightfoot, H. 2013. Made to Serve: How manufacturers can compete through servitization and product service systems. Wiley.

Berg-Andersson, B. 2019. Ulkomaankauppa [Foreign trade]. Etla,16 September 2019. Accessed on 5 May 2020. Retrieved from https://www.suhdanne.fi/kotimainen-talous/ulkomaankauppa-kotimainen-talous/ulkomaankauppa-192/

Britannica. 2020. Finland. Encyclopedia Britannica, 26 May 2020. Accessed on 29 May 2020. Retrieved from https://www.britannica.com/topic/public-investment

Chappelow, J. 2020. Gross Domestic Product (GDP). Investopedia, 30 May 2020. Accessed on 30 May 2020. Retrieved from https://www.investopedia.com/terms/g/gdp.asp

Economic Survey, Winter 2019. Ministry of Finance. Accessed on 26 May 2020. Retrieved from http://julkaisut.valtioneuvosto.fi/handle/10024/161966

Elinkeinoelämän keskusliitto. N.d. Ek:n vientitiedustelu [Ek's inquiry on investments]. Elinkeinoelämän keskusliitto. Accessed on 29 May 2020. Retrieved from https://ek.fi/mita-teemme/talous/suhdanteet/ekn-investointitiedustelu/

Elinkeinoelämän keskusliitto. N.d. Tuotanto ja investoinnit [Production and investments]. Elinkeinoelämän keskusliitto. Accessed on 5 May 2020. Retrieved from https://ek.fi/mita-teemme/talous/perustietoja-suomen-taloudesta/3998-2/

European Central Bank. 2016. Economic Bulletin Issue no. 02/2016. European Central Bank, March 2016. Accessed on 28 May 2020. Retrieved from https://www.ecb.europa.eu/pub/pdf/ecbu/eb201602.en.pdf

Goswami, A. G. M., Goswami, A. G., Mattoo, A. & Sáez, S. 2012. Exporting Services. Washington: World Bank Publications.

Grafers, H. W. & Schlich, A. W. 2006. Strategic export management. Helsinki: WSOY oppimateriaalit.

Hakala, J. T. 2004. Opinnäyteopas ammattikorkeakouluille [Thesis instructions for Universities of Applied Sciences. Helsinki: Gaudeamus.

Järvinen, J. 2016. Ekonomistit: Suomen talouden suurin ongelma on vienti [Economist: Exporting is largest issue for Finland's economy]. Yeisradio Oy, 16 August 2016. Accessed on 22 February 2018. Retrieved from https://yle.fi/uutiset/3-9096890

Kananen, J. 2015. Kehittämistutkimuksen kirjoittamisen käytännön opas: Miten kirjoitan kehittämistutkimuksen vaihe vaiheelta. Jyväskylä: Jyväskylän ammattikorkeakoulu.

Kavonius, I. K. 2012. Bkt:n kasvun kaksi kuvaa [Two pictures of GDP's growth]. Taloustieteellinen yhdistys, 16 March 2012. Accessed on 27 May 2020. Retrieved from https://www.taloustieteellinenyhdistys.fi/images/stories/kak/KAK12012/kak12012kavonius.pdf

Kento, W. 2020. Rate of Return. Investopedia, 31 March 2020. Accessed on 28 May 2020. Retrieved from https://www.investopedia.com/terms/r/rateofreturn.asp

Lavin, F. L. & Cohan, P. S. 2011. Export now: Five keys to entering new markets. Singapore: John Wiley & Sons.

Lee, S. 2019. Public investment. Encyclopedia Britannica, 9 January 2019. Accessed on 27 May 2020. Retrieved from https://www.britannica.com/topic/public-investment

Majaski, C. 2019. Net Exports. Investopedia, 4 October 2019. Accessed on 27 May 2020. Retrieved from https://www.investopedia.com/terms/n/netexports.asp

Mäki-Fränti, P. & Vilmi, L. 2016. Miksi Suomi ei pysy vertaistensa vauhdissa [Why Finland cannot keep up with the peers]. Euro & Talous, 21 March 2016. Accessed on 5 May 2020. Retrieved from https://www.eurojatalous.fi/fi/2016/1/miksi-suomi-ei-pysy-vertaistensa-vauhdissa/

Malinen, T. 2015. Pelastaisivatko julkiset investoinnit Suomen? [Could public investments save the economy of Finland]. L!bera,15 April 2015. Accessed on 5 May 2020. Retrieved from https://www.libera.fi/2015/04/15/pelastaisivatko-julkiset-investoinnit-suomen/

Moran, T., Görg, H. et al. N.d. Attracting quality foreign direct investment in developing countries. International Growth Centre, n.d. Accessed on 28 May 2020. Retrieved from https://www.theigc.org/blog/attracting-quality-foreign-direct-investment-developing-countries/

Our History. N.d. Page on the Nokia's website. Accessed on 26 May 2020. Retrieved from https://www.nokia.com/about-us/what-we-do/our-history/

Rajaram, A. K., Kaiser, K. & Rajaram, A. 2014. Power of Public Investment Management. World Bank Publications.

Rikama, S. & Salmi, H. 2010. Kovenevaan kilpailuun vastataan koulutuksella ja innovoinnilla [The answer for tougher competition is education and innovation]. Tilastokeskus, 10 November 2010. Accessed on 26 May 2020. Retrieved from https://www.stat.fi/artikkelit/2010/art_2010-11-10_003.html?s=0

SAUNDERS, M., LEWIS, P. and THORNHILL, A., 2009. Research methods for business students. 5th ed edn. Harlow: Prentice Hall.

Segal, T. 2020. Export Definiton. Investopedia, 3 February 2020. Accessed on 27 May 2020. Retrieved from https://www.investopedia.com/terms/e/export.asp

Social Science Statistics. N.d. Pearson Correlation Coefficient Calculator. Social Science Statistics, n.d. Accessed on 1 June 2020. Retrieved from https://www.socscistatistics.com/tests/pearson/

Suvanto, A. 2015. Kertautuvatko julkisten investointien vaikutukset? [Do effects of public investments multiply?]. Kaleva, 6 March 2015. Accessed on 28 May 2020. Retrieved from https://www.kaleva.fi/kertautuvatko-julkisten-investointien-vaikutukset/1882612

this is FINLAND. 2020. FINLAND IN FACTS. this is FINLAND, April 2020. Accessed on 29 May 2020. Retrieved from https://finland.fi/facts-stats-and-info/finland-in-facts-2/

Tilastokeskus. n.d. Statistics Finland's PxWeb databases. Tilastokeskus, n.d. Accessed on 29 May 2020. Retrieved from https://pxnet2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin__kau__taukyv/statfin_taukyv_pxt_001.px/chart/chartViewLine/

Tulli. N.d. Tavaroiden ulkomaankauppa [Trade of goods]. Tulli. Accessed on 29 May 2020. Retrieved from https://tulli.fi/tilastot/tavaroiden-ulkomaankauppa

Katzman, J. 2011. A basic guide to exporting: The official government resource for small- and medium- sized businesses / edited by Jason Katzman. United States. International Trade Administration. New York: Skyhorse Pub.

Väisänen, K. 2018. Väärää vientiä: Mene itään tai länteen, mutta tee kotiläksysi [Go east or west, but do your homework]. Helsinki: Alma Talent.

Vihriälä, V. 2017. Suomen vienti on kehittynyt heikosti [Finland's exporting lacks advancement]. ETLA, 16 August 2016. Accessed on 6 December 2017. Retrieved from https://www.etla.fi/ajankohtaista/kolumnit/suomen-vienti-on-kehittynyt-heikosti/

Vilkka, H. 2007. Tutki ja mittaa: Määrällisen tutkimuksen perusteet. Helsinki: Tammi.

Warner, A. M. 2014. Public Investment As an Engine of Growth. International Monetary Fund.

Woznick, A. & Woznick, A. 2000. A Basic Guide to Exporting: U. S. Department of Commerce. World Trade Press.

Yle 2019. Ylen toimintakertomus ja tilinpäätös 2019 [Yle’s annual report and financial statement 2019]. Yleisradio Oy, 11 March 2020. Accessed on 26 May 2020. Retrieved from https://yle.fi/aihe/ylen-vuosi-2019